

### **3<sup>rd</sup> Quarterly Report – Public Page**

Date of Report: *February 27, 2008*

Contract Number: *DTPH56-08-T-000010*

Prepared for: *U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA)*

Project Title: *Direct strain measurements and failure pressure prediction in mechanically damaged and strained pipes*

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For quarterly period ending: *February 28, 2008*

***Public Page Section-*** This section contains information on the technical status of the Project and the milestones completed during the quarter. Information will be information that PHMSA may release to the public in whole or in part at any time. The information must not contain proprietary data or confidential business information. The Team Project Manager must provide a point of contact for coordination, preparation, and distribution of any press releases.

#### ***General Information required on all Public Quarterly Reports***

##### **Results and Conclusions**

In the last quarter, we were able to successfully predict the strain in the wrinkled pipe sent from El Paso Gas. The prediction was based on novel ultrasonic measurements that are independent of thickness and provide an estimate of the strain in the pipe. These measurements are very encouraging and provide evidence that the ultrasonic strain measurements can be routinely performed on pipes. The next step is to perform additional measurements, calibrate the ultrasonic data, and develop field calibration methods and handheld instrumentation.



Figure 1. Kinked pipe from El Paso Gas in the Luna Hampton Facility

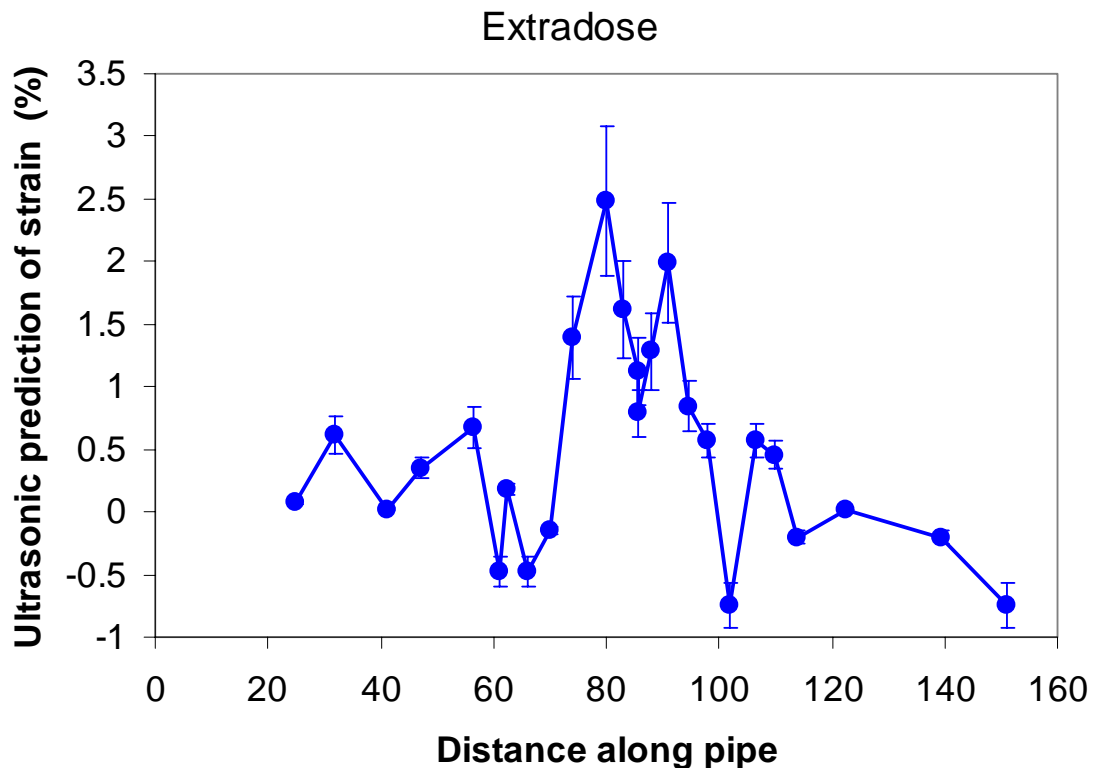


Figure 2. Ultrasonic prediction of strain along extradose of bent pipe

**Plans for Future Activity:**

Additional measurements need to be made along the intradose of the wrinkled pipe at specific points as well as by scanning the EMAT along the surface of the pipe. Tensile specimens need to be cut from the pipes and tensile test need to be performed on them to determine pipe grade as well as to calibrate the ultrasonic measurements. In addition, the strain in the bent pipe needs to be calculated from mechanics models to aid in the calibration procedures. Discussions with an EMAT vendor about a handheld version of the EMAT system have begun and their progress will rapidly advance this technology to a handheld version. In addition, future work will include field work in California. We

will continue work on the burst pressure modeling and coordinating with PRCI member companies. The team project deliverables are:

4. Conduct field work and provide assessment of measurement capabilities and electronic design
5. Submit 4<sup>th</sup> quarterly report